

# The Relationship Between Personality Traits and the Strength of Anxiety Symptoms

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Research has been conducted to assess the correlation between five personality factors and the strength of anxiety symptoms in high school students. This is particularly significant because adolescent anxiety can lead to future mental deterioration. The research that has been conducted implements the Big Five Personality Test and the Beck Anxiety Inventory (BAI). The five personality types, extraversion, neuroticism, openness, agreeableness, and conscientiousness, as well as the anxiety levels are self-reported on a continuum. The answers on the Big 5 Test range from “disagree” to “agree” with the statements while the BAI ranges from “not at all” to “severely” in terms of how intensely the symptoms are experienced. Based on the 146 responses from high school students in a suburban school district in South Carolina, there is a weak correlation between the factors. This does not support the hypothesis that students with high levels of neuroticism and low levels of extraversion will experience higher levels of anxiety symptoms, as well as the hypothesis that there would be no correlation between agreeableness, conscientiousness, and openness with anxiety symptoms. The strength of these correlations was determined with the use of a linear regression t-test for statistical analysis. While the correlation coefficients were weak, the direction of the linear pattern for neuroticism and extraversion matched the hypothesis. The p-value between extraversion and anxiety, 0.003, indicates that the relationship is statistically significant, making its correlation less likely due purely to chance.

## Introduction

The Child Mind Institute (2015), a nonprofit whose mission is to better the lives of children suffering from mental illnesses, discovered that anxiety disorders are the most common mental illnesses in children ages thirteen to eighteen. Furthermore, 80% of adolescents with diagnosable anxiety disorders are not receiving treatment. If left untreated, anxiety disorders can have negative long-term effects such as a greater likelihood of developing additional mental illnesses such as depression, post-traumatic stress disorder (PTSD), and suicidal tendencies in the future. In addition to this, suicide attempts are more probable in those who suffer from anxiety. According to a study conducted by members of the Department of Psychiatry at the University of Manitoba, it was found that among the total number of people who had attempted suicide in their lifetime, 70% suffered from a diagnosed anxiety disorder (Nepon et al., 2010). These statistics reveal that anxiety is a prevalent mental illness that is potentially fatal. Furthermore, the coronavirus pandemic has caused the mental health of many to deteriorate. In one study, researchers from various universities and institutes in the United Kingdom, found that the prevalence of anxiety is greater now, during the COVID-19 pandemic, than usual. It was concluded that the pandemic, self-isolation and quarantine contribute to increased anxiety. It was also discovered that younger age ranges are the primary group experiencing this difficulty (Smith et al., 2020). Now more than ever, it is essential to gain a greater understanding of mental health.

One way in which mental health, specifically anxiety, can be understood is through personality traits. Vernon Brant (n.d.), a graduate of Liberty University's Advanced Life Coaching, found that differing personality traits can have different reactions to situations. For instance, those that exhibit introversion, “orientation toward the internal private world of one's self and one's inner thoughts and feelings,” might become more sheltered when someone they don't know starts a conversation with them (VandenBos, 2006). On the other hand, people with extraversion may be able to carry on the conversation with no problems. Moreover, Beyond Blue (n.d.), an Australian mental health website, states that people with certain personality traits are more likely to have anxiety. While not specified, some of these traits may include, extraversion, agreeableness, conscientiousness, neuroticism, and openness, which are all factors of the Big Five Personality Test. These characteristics are defined as the following according to the American Psychological Association (APA) Dictionary: extraversion is “characterized by an orientation of one's interests and energies toward the outer world of people and things”, agreeableness is “the tendency to act in a cooperative, unselfish manner”, conscientiousness is “the tendency to be organized, responsible, and hardworking”, neuroticism is “characterized by a chronic level of emotional instability and proneness to psychological distress”, and finally openness to experience is “the tendency to be open to new aesthetic, cultural, or intellectual experiences” (VandenBos, 2006).

Because anxiety and personality traits have both been proven to be important and predictive independently, it is possible for a correlation to be determined between these two factors.

## Literature Review

Kilmstra (2013), a member of the Department of Developmental Psychology at Tilburg University in the Netherlands, found that not only does identity, “an individual's self-defined characteristics”, develop during adolescence, so does personality, “the configuration of characteristics and behavior that comprises an individual's unique adjustment to life” (VandenBos, 2006). By studying adolescents that are in the stages of developing their personality, it can be determined whether anxiety develops alongside personality. If so, further research can be conducted to determine ways to curtail the formation of specific personality traits before they develop completely. This is significant because if anxiety can be stopped at the source by reducing the strength of the traits that are correlated with anxiety, then its negative effects would decrease. To clarify, if there is a greater awareness of harmful traits and knowledge as to how they develop, steps can be made to intervene and possibly prevent anxiety to a certain extent in those who exhibit defining characteristics. Personality in high school students is an evolving field of study because of this developmental aspect as well as its significance in predicting important life outcomes. When professionals of various institutes and universities, such as the University of Illinois, the University of Minnesota, and the Oregon Research Institute, collaborated in a longitudinal study, they found that personality traits were just as important as factors such as socioeconomic status (SES) and intelligence quotient (IQ) in predicting the important life outcomes of mortality, divorce, and occupational attachment (Roberts et al., 2007). This indicates that personality traits are associated with a wide variety of information. This being the case, if a correlation can be determined between personality traits and anxiety there is the potential for personality to be a predictor of anxiety.

Several forms of previous research has been conducted that discusses the relationship between personality and anxiety. When focusing on more broad and subjective association with personality, it was found that well being and life satisfaction were positively correlated with extraversion, agreeableness, and openness to experience. This research conducted by Singh and Lal (2012), members of the Department of Applied Psychology at Veer Bahadur Singh (VBS) Purvanchal University in Jaunpur, shows a comprehensive outlook as to how personality traits can be related to one's overall outlook upon life. More specifically, research supported by the Netherlands Organization for Scientific Research had the goal of determining the relationship between personality and depressive and anxious psychopathology. It was determined that neuroticism is highly correlated with anxiety while extraversion is negatively correlated (Middeldorp et al., 2006). In a three year prospective study conducted by members of the psychology department at the University of Missouri, the same correlation between neuroticism and extraversion was found (Gershuny & Sher, 1998). The idea that neuroticism is correlated to anxiety is further supported in research conducted by members of Johns Hopkins University and the National Institutes of Health. It was determined based upon the study of students recruited as part of the Hopkins Epidemiology of Personality Disorders Study, that lifelong disorders of interest were associated with high levels of neuroticism. Among these disorders were generalized anxiety disorder, obsessive compulsive disorder, major depressive disorder, and more. Consistent with previous research the findings suggest a relationship between anxiety and neuroticism and extraversion (Bienvenu, 2004). This is significant because the previous research establishes a relationship between certain personality factors, mainly neuroticism and extraversion, with anxiety.

Information collected from parents' perspectives of their children's personality also collectively found that neuroticism and extraversion were correlated with anxiety. While results were similar in this study, extraversion appeared as the strongest correlate for both clinically anxious as well as nonclinical children (Vreeke & Muris, 2012). This contrasted with the first two studies that were mentioned as those studies found that neuroticism was the strongest correlate. In a continuation of research done by Vreeke and Muris, Muris et al. (2017) focused on personality traits and their relation to anxiety disorder symptoms in non clinically anxious children. Overall, high levels of neuroticism were associated with high symptom levels of major anxiety disorders. Similarly low levels of extraversion were also associated with higher symptom levels.

As seen above, there is previous research that has been done to analyze the correlation between personality and anxiety. However, other than the studies discussed there is a limited amount of research that has been conducted with the goal to determine a relationship, indicating a gap in the field of study that needs to be addressed. Even more scarce is the research involving the Big Five Personality Test, which is the survey that will be used to determine personality traits in the case of this experimentation. Furthermore, the research that has been conducted primarily involves children, college students, or adults, and therefore lacks information that pertains to adolescents and high school students. Additionally, the majority of current information in this field of study has not been published in recent years. By confronting the many gaps in knowledge, this research will provide new insight due to the existing lack of examination. Based on this knowledge, the following research question is proposed: To what extent are different personality traits correlated with the strength of anxiety symptoms in high school students?

Since results are similar in several research articles in terms of neuroticism and extraversion, it is probable that these traits will have correlations in this research. Furthermore, studies that used the Big Five Personality Test found little to no correlation with agreeableness, openness to experience or conscientiousness except for the research that examined a comprehensive relationship. This information leads to the hypothesis that high school students who have personality types with high levels of neuroticism and low levels of extraversion will be more likely to experience anxiety related symptoms while agreeableness, conscientiousness, and openness to experience will have no correlation to anxiety related symptoms.

## Methods

In order to expand the field of research and address the gaps, this study utilizes a correlational research method to determine a relationship between the two variables: personality characteristics and the strength of anxiety symptoms. The explanatory variable is the personality traits and the response variable is the strength of the anxiety symptoms. However, independent and dependent variables are not specified in this study because there is not an established causal relationship between the two variables.

This research measures the personality factors and the strength of anxiety symptoms with the help of the Big Five Personality Test and the Beck Anxiety Inventory. The Big Five Test, created and expanded upon by many prominent psychologists such as Gordon Allport and Henry Odbert, uses broad wording and definitions in order to cover a multitude of personality related terms (Lim, 2020). For this study, the Big Five Personality Test was retrieved from the International Personality Item Pool, a public domain for personality tests managed by the Oregon Research Institute. The five traits that this test examines include extraversion, agreeableness, conscientiousness, neuroticism, and openness. Similarly, the Beck Anxiety Inventory (BAI) is a popular tool in the field of psychology used to assess the strength of physical and mental anxiety symptoms. Retrieved from Great Plains Health, a nonprofit health system that offers advanced medical services, the survey is a simple screening method that can be used in clinical circumstances as well as nonclinical scenarios such as this study. The BAI varies from other tools because it measures anxiety in terms of strength rather than just its presence. This is important because it accounts for those with temporary feelings of anxiety as well as those who suffer from chronic anxiety disorders.

The Big Five Personality Test (Appendix A) presents 50 statements while the BAI (Appendix B, Figure 2) lists 21 common anxiety symptoms. In both self-reported qualitative inventories, respondents are asked to rank each statement or symptom based upon how closely it relates to themselves. The Big Five Test utilizes the Likert scale to rank the level of agreement and goes from 1 (disagree) to 5 (agree). The BAI is similar, although it differs because it ranges from 0 to 3 with the following levels of how often one was bothered by the symptom in the last month: 0 indicates not at all, 1 indicates mildly, 2 indicates moderately, and 3 indicates severely. Example questions for the Big Five Personality Test are shown in Figure 1 and example questions for the Beck Anxiety Inventory are shown in Figure 2.

After the initial research plan was approved by the institutional review board (IRB), the first step in the procedure was the compilation of the questions. The survey used in this research combines questions from both surveys along with questions about grade, gender, and the high school the participants attend in a Google Form (Appendix C) to ensure that the data is not influenced by confounding variables. For example, if the demographic data were to present a majority of responses from one specific gender, then the results would only be able to be applied to the majority gender because the sample only addresses this portion of the population. Before the participants were able to provide this information, they were required to consent to their responses being used for this research (Appendix D).

Once the survey was created, participants (high school students, aged 13–18) were found. In this case, teachers from four high schools in a suburban school district in Columbia, South Carolina were contacted. Four highschools were surveyed because this was the total number of high schools present in the chosen school district. The selected teachers taught various subjects as well as different academic level classes (college preparatory, honors, and Advanced Placement® [AP]) in order to obtain data that would most closely represent the total population being

Rating	I....	Rating	I....
	1. Am the life of the party.		26. Have little to say.
	2. Feel little concern for others.		27. Have a soft heart.
	3. Am always prepared.		28. Often forget to put things back in their proper place.
	4. Get stressed out easily.		29. Get upset easily.
	5. Have a rich vocabulary.		30. Do not have a good imagination.

**Figure 1: Questions 1-5 and 26-30 from the Big Five Personality Test**

	Not at all	Mildly, but it didn't bother me much	Moderately – it wasn't pleasant at times	Severely – it bothered me a lot
Numbness or tingling	0	1	2	3
Feeling hot	0	1	2	3
Wobbliness in legs	0	1	2	3
Unable to relax	0	1	2	3
Fear of worst happening	0	1	2	3

**Figure 2: Questions 1-5 from the Beck Anxiety Inventory**

researched. In order to determine which teachers to contact at each school, a stratified random sample was conducted. For each high school, all of the teachers were assigned a number (from 1 to the total number of teachers at the school), and a random digits table was used to choose ten random teachers from each school. From there, the 40 chosen teachers were contacted through their email and asked if they were willing to give their students the opportunity to complete the survey via a link. This method of data collection was chosen due to the widespread restrictions put in place in the school district due to the coronavirus pandemic. By using a Google Form and email distribution, it was easier to gather a larger range of participants because during the data collection time period the school district was utilizing a hybrid learning model. While the teachers were asked not to require students to participate, they were asked to strongly encourage their students to engage in the research in a serious manner. By having teachers not require student participation, the goal was to reduce the number of subjects who would give false information or quickly complete the task with little consideration, especially since responses were entirely anonymous. However, since involvement is voluntary, the possibility of voluntary response bias needs to be considered. The email sent to the teachers also contained further background information about the research in order to provide more detail to both the teachers and participants.

The time required for participation may vary among individuals, but the test was expected to take approximately ten to twenty minutes. Once the surveys were submitted, the data from participants were stored in a secure folder (which was made secure by limiting who had viewing access) to further ensure the anonymity of participants.

## Data Analysis

In order to analyze data, linear regression t-tests (LinRegTTest) for correlational analysis were used. This test determines the Pearson correlation coefficient ( $r$ ) between personality traits and the strength of anxiety symptoms. This analysis creates scatterplots from the data, and then a line of best fit was applied to the data points. Based on the line of best fit, the Pearson correlation coefficient can be determined, which describes the direction and strength of a linear relationship between the two quantitative variables. The  $r$  value is always between -1 and 1, and the closer it is to these values, the stronger the linear relationship. The closer  $r$  is to 0, the weaker the linear relationship. Furthermore if the  $r$  value is negative, then the slope of the linear relationship is negative, and if the  $r$  value is positive, the slope of the relationship is positive (Sims, 2020).

The analysis also provides a p-value, which is defined by the American Statistical Association as “the probability under a specified statistical model that a statistical summary of the data would be equal to or more extreme than its observed value” (Wasserstein, 2020). In simpler terms, the p-value determines if the relationship is statistically significant. According to Harvard Business Review, statistical significance helps to determine whether a result is due to chance or the factors of interest (Gallo, 2016).

To begin, data from the survey was transferred to a spreadsheet. Based upon the survey responses (146), calculations were conducted to determine the scores for neuroticism, extraversion, openness, agreeableness, conscientiousness, and anxiety levels. In order to analyze the data by means of linear regression t-tests, numerical values were assigned to each response. For the Big Five Personality Test, each trait was given a score based on the rating of each statement. Different questions connect to the five personality traits, some positively and some negatively. For example, Figure 1 question 1 of the Big Five Personality Test applied to extraversion and was positive because a higher score would indicate the individual was more extraverted. Similarly, Figure 1 question 26 is also used to determine the extraversion score; however it is negative because the higher the score given for the response, the less extraverted the individual is determined to be. Based on these scoring guidelines (Appendix E), each trait was given a quantitative value that was used to determine the correlation. The closer the value is to 40, the stronger the trait is for the individual. Conversely, the closer the value is to 0, the weaker the trait is for the individual. This indicates that the traits are measured on a continuum, meaning that individuals may fall anywhere on the range for each trait. For neuroticism, an individual may be anywhere between calm and confident and anxious and pessimistic. This is the same for the four other traits as well. In terms of the BAI, the sum of all responses of 0 to 3 are added together. If the overall score is between 0 and 21, the participant is determined to have low anxiety; if the score is between 22 and 35, the participant is determined to have moderate anxiety; and if the score is 36 and above, the participant is determined to have high levels of anxiety (Appendix E). By using a spreadsheet that is linked to the survey, new responses were automatically generated, with the help of the addition

function. Since the data was originally received in qualitative terms, the words were manually removed, leaving the numerical values for calculations.

Once the spreadsheet was formatted correctly, it was uploaded to the program Minitab 19, where the data were transferred into the necessary scatterplots. The graphs compared the following: neuroticism and anxiety levels; extraversion and anxiety levels; openness and anxiety levels; agreeableness and anxiety levels; and finally conscientiousness and anxiety levels. These five graphs were then analyzed with the assistance of Minitab 19 and the LinRegTTest function in order to determine the strength of the correlations as well as if there was statistical significance.

## Results

Overall, the results of the data analysis found there is a weak correlation between anxiety levels and each of the personality traits. The personality scores in relation to the BAI depict weak correlations (Figure 3) because they are all below 0.3 which generally indicates that a correlation is moderate as evidenced by Cohen's conventions, commonly used in psychological research (Emory University, n.d.). Furthermore, a weak correlation is depicted in the scatterplots because the data points are spread out and only loosely follow the linear regression lines (Appendix F).

	Pearson Correlation Coefficient	p-value
BAI Score vs Extraversion	-0.243	0.003
BAI Score vs Agreeableness	0.128	0.125
BAI Score vs Conscientiousness	-0.059	0.481
BAI Score vs Neuroticism	0.035	0.674
BAI Score vs Openness	0.089	0.284

**Figure 3: Data Collected from Minitab 19**

The highest correlation coefficient is -0.243 between extraversion and the BAI score. This supports the research done by Vreeke and Muris (2012), who found that extraversion was the strongest correlate when using the Big Five Personality Test. While their results were different from others in the field based on their findings of the strongest correlate with anxiety, this research corroborates their findings. Additionally, this research differs from others in the field as the correlation between neuroticism and anxiety is only 0.048. This extremely weak correlation contradicts the results of research done by entities such as the Netherlands Organization for Scientific Research and the Department of Psychology at the University of Missouri (previously mentioned in the Literature Review) which displayed that the relationship between anxiety and neuroticism was strongly correlated.

While the results of this research do not support the hypothesis in terms of the strength of the scores for extraversion and neuroticism, they do support the prediction that extraversion is one of the strongest correlates with anxiety. The hypothesis was also not supported because the correlations between anxiety and conscientiousness, openness, and agreeableness, while weak, are not zero as predicted.

Based on the p-values resulting from the analysis (Figure 3), extraversion is the only personality trait that is correlated with anxiety levels that is statistically significant (p-value = 0.003), indicating that the results are less likely to be the result of chance. Consequently, this analysis demonstrates that, under the previous definition, the results are impacted by the interested factors rather than by coincidence. Since extraversion is the only personality trait that is statistically significant, as its p-value is below 0.05, this could also mean that the results could have been impacted by design rather than the factors being researched. However, the American Statistical Association (2020) issued a statement denouncing this theory. As expressed in the report, "scientific conclusions and business or policy decisions should not be based only on whether a p-value passes a specific threshold." Based on this interpretation the lack of statistical significance in the majority of the correlations does not impact the determined values.

## Conclusions

Although the results did not support the hypothesis, the information gained from this research is still significant. By supporting the results of pre-existing studies, and determining that extraversion is the strongest correlate, this research furthers the question of whether neuroticism or extraversion has a stronger correlation with anxiety, due to the differing results displayed throughout the field of study. This is an important topic to be discussed because factors that are correlated with anxiety may pertain to a causal relationship.

Limitations of this study in regard to previous research includes the lack of resources. While a large group of participants was acquired, they had no direct contact with the researcher. By relying on teachers to provide the survey to their students with a thorough explanation, the control of the researcher was limited. Ideally, the participants would've been directly contacted, and the manner of the research explained. Additionally, while the teachers were asked to not require the students to complete the survey in hopes of obtaining only legitimate responses, there is no guarantee that this was the case. Additionally, there was no way to differentiate the legitimate responses from the responses of participants who did not take the research seriously. Because of this, the correlations could have been influenced by inaccurate data. However, if the teachers respected this request, then the results include voluntary response bias. In the case of this research, voluntary response bias would not include overrepresenting those with strong opinions because the participants were unaware as to how their responses were going to be scored and compared. Aside from this, responses could be inaccurate because the survey was self-reported. Furthermore, because responses were self-reported, respondents had the ability to exclude any information that they deemed unnecessary or felt uncomfortable sharing. These students were able to manipulate responses in order to fit what they felt was correct in order to avoid judgment. Another limitation of this research includes the structure of the questions. By assessing The Big Five Personality Test through the Likert Scale, responses are broad, thus making it difficult to encompass the extent to which the participants agree,

disagree, or are neutral to the statements. The same limitation of broadness can be applied to the BAI because the same exact symptoms for two different people may be handled or perceived differently.

While the lack of similarity to a majority of previous research and lack of support for the hypothesis may be believed to bring uncertainty to the field of study rather than new information, this is not the case. The statistically significant negative correlation between extraversion and anxiety symptoms shows that anxiety is not independent and is potentially associated with other factors. Further exploring the relationship between extraversion and anxiety levels with the goal of determining if a causal relationship is present could greatly influence the field of psychology. One implication of this research includes becoming aware of precipitating occurrences and/or behaviors that would indicate the development of anxiety in adolescents. Another implication includes this research's effect on the common perception of personality. The results indicating that personality traits do not have a significant correlation with anxiety also brings up whether or not personality should be a determining factor in other scenarios. As a society, we tend to be unintentionally biased when observing others and thus can use the way individuals exhibit their personality as a way to make assumptions about other aspects of their lives. Since anxiety diagnoses are based solely upon the opinion of a professional, there is always the potential for cognitive bias when a diagnosis is made. This being said, if a psychologist has a preconceived notion that certain personality traits signal anxiety their diagnosis may reflect this attitude. More specifically, if confirmation bias, "the tendency to gather evidence that confirms preexisting expectations," is applied to the knowledge that a professional has about personality psychology then, using the extraversion versus introversion example, they may be more likely to diagnose an introvert with anxiety than an extrovert because of research that reinforces a widespread belief (VandenBos, 2006). Other forms of cognitive bias such as representativeness heuristic, creating judgements by comparing how closely an individual matches a typical member of the population, could also cause false diagnoses based on common presumptions of the relationship between personality and anxiety (VandenBos, 2006). This research is significant in that it further proves that bias is harmful when making mental health diagnoses because of the lack of correlation between personality and anxiety, which may not align with the assumptions used to support diagnoses.

In the future, this research could be replicated using different sampling methods. By stratifying with different groupings, the effects of the confounding variables that influenced the results may be minimized. Included in this would be focusing on students within specific grades, academic levels (college preparatory, honors, and Advanced Placement®), and schools. Considering a multitude of factors within one research study likely influenced the wide dispersion of data points over the scatterplot as well as the weak correlation coefficients. If this study were to be recreated, the scope of the question could be more focused on specific personality factors and more than one sample could be collected to address these limitations. Furthermore, in future studies the researcher could be in direct contact with the participants, while still obtaining consent and keeping their identities private, in order to make sure the responses were accurate and not the result of uninterested parties not taking the research seriously. By expanding upon this research in future studies, the relationship between personality and anxiety can be understood beyond the scope.

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## Appendix A

### Big Five Personality Test

In the chart below, mark how much you agree with each statement on the scale 1-5 where 1=disagree, 2=slightly disagree, 3=neutral, 4=slightly agree, and 5=agree. \*

	1: Disagree	2: Slightly Disagree	3: Neutral	4: Slightly Agree	5: Agree
Am the life of the party.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel little concern for others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Am always prepared.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Get stressed out easily.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have a rich vocabulary.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Don't talk a lot.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Am interested in people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Leave my belongings around.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Am relaxed most of the time.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have difficulty understanding abstract ideas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel comfortable around people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Insult people.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pay attention to details.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Worry about things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have a vivid imagination.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Keep in the background.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sympathize with others' feelings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Make a mess of things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Seldom feel blue.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Am not interested in abstract ideas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Start conversations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Am not interested in other people's problems.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Get chores done right away.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Am easily disturbed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have excellent ideas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have little to say.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Have a soft heart.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Often forget to put things back in their proper place.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Get upset easily.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do not have a good imagination.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Talk to a lot of different people at parties.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Am not really interested in others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Like order.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Change my mood a lot.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Am quick to understand things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Don't like to draw attention to myself.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Take time out for others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shirk my duties.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have frequent mood swings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use difficult words.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Use difficult words.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Don't mind being the center of attention.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel others' emotions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Follow a schedule.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Get irritated easily.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Spend time reflecting on things.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Am quiet around strangers.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Make people feel at ease.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Am exacting in my work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Often feel blue.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Am full of ideas.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Appendix B

### Beck Anxiety Inventory

Indicate how much you have been bothered by each symptom during the past month, including today, by marking the box in the corresponding space in the column next to each symptom. \*

	0: Not at all	1: Mildly, but it didn't bother me much	2: Moderately, it wasn't pleasant at times	3: Severely, it bothered me a lot
Numbness or tingling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling hot	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wobbliness in legs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unable to relax	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fear of worst happening	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dizzy or lightheaded	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Heart pounding / racing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unsteady	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Terrified or afraid	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Nervous	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feeling of choking	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hands trembling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Shaky / unsteady	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fear of losing control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Difficulty in breathing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fear of dying	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Scared	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Indigestion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Faint / lightheaded	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Face flushed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hot / cold sweats	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Appendix C

### Demographic Questions Added to the Surveys

Gender? \*

Choose ▼

Grade? \*

Choose ▼

Highschool?

Choose ▼

## Appendix D

### Consent Statement Provided in Google Form

**Consent Information**

The purpose of this research project is to determine if there is a correlation between personality traits and the strength of anxiety symptoms. This is a research project being conducted by [redacted] [redacted]. You are invited to participate in this research project because you are a student in District 5.

Your participation in this research study is voluntary. You may choose not to participate. If you decide to participate in this research survey, you may withdraw at any time. If you decide not to participate in this study or if you withdraw from participating at any time, you will not be penalized.

The procedure involves filling an online survey that will take approximately 10 to 20 minutes. Your responses will be confidential and no identifying information will be collected such as your name, email address or IP address. The survey questions will be about your personality and anxiety symptoms you experience.

I will do my best to keep your information confidential. All data is stored in a password protected electronic format. To help protect your confidentiality, the surveys will not contain information that will personally identify you. The results of this study will be used for scholarly purposes only and may be shared with [redacted] representatives.

If you have any questions about the research study, please contact me at [redacted]. This research has been reviewed according to Chapin High School AP Research IRB procedures for research involving human subjects.

If you do not wish to participate in this research study, please decline participation by clicking on the disagree button. \*

☐ Agree

☐ Disagree

## Appendix E

### Big Five Personality Test Scoring Guidelines

$$E = 20 + (1) \text{ ___ } - (6) \text{ ___ } + (11) \text{ ___ } - (16) \text{ ___ } + (21) \text{ ___ } - (26) \text{ ___ } + (31) \text{ ___ } - (36) \text{ ___ } + (41) \text{ ___ } - (46) \text{ ___ } = \text{ ___ }$$

$$A = 14 - (2) \text{ ___ } + (7) \text{ ___ } - (12) \text{ ___ } + (17) \text{ ___ } - (22) \text{ ___ } + (27) \text{ ___ } - (32) \text{ ___ } + (37) \text{ ___ } + (42) \text{ ___ } + (47) \text{ ___ } = \text{ ___ }$$

$$C = 14 + (3) \text{ ___ } - (8) \text{ ___ } + (13) \text{ ___ } - (18) \text{ ___ } + (23) \text{ ___ } - (28) \text{ ___ } + (33) \text{ ___ } - (38) \text{ ___ } + (43) \text{ ___ } + (48) \text{ ___ } = \text{ ___ }$$

$$N = 38 - (4) \text{ ___ } + (9) \text{ ___ } - (14) \text{ ___ } + (19) \text{ ___ } - (24) \text{ ___ } - (29) \text{ ___ } - (34) \text{ ___ } - (39) \text{ ___ } - (44) \text{ ___ } - (49) \text{ ___ } = \text{ ___ }$$

$$O = 8 + (5) \text{ ___ } - (10) \text{ ___ } + (15) \text{ ___ } - (20) \text{ ___ } + (25) \text{ ___ } - (30) \text{ ___ } + (35) \text{ ___ } + (40) \text{ ___ } + (45) \text{ ___ } + (50) \text{ ___ } = \text{ ___ }$$

### Beck Anxiety Inventory Scoring Guidelines

The total score is calculated by finding the sum of the 21 items.

Score of 0-21 = low anxiety

Score of 22-35 = moderate anxiety

Score of 36 and above = potentially concerning levels of anxiety

## Appendix F



